

## CLAIMS

What is claimed is:

- 5 1. A method of treatment or prophylaxis of a disease state or a condition in an organism, the method comprising:
- generating electromagnetic field having a magnetic flux density from about  $5 \times 10^{-6}$  gauss to about  $1 \times 10^{-12}$  gauss and a frequency of between zero and about 140 Hertz, wherein the electromagnetic radiation is applied therapeutically to treat or
- 10 prevent cardiac diseases and conditions; and
- subjecting an organism having a diseased state or condition which is at least one of irregular heart rate, elevated blood pressure, cardiovascular failure, cancer, cataracts, immunological conditions, blood clots, atrial fibrillation, ventricular fibrillation, atrioventricular blockage, diseased heart valves, enlarged heart,
- 15 circulatory blockage, coronary insufficiencies, and ischemia, to the electromagnetic field.
2. The method of claim 1, further comprising:
- calculating the appropriate magnetic flux density using the formula  $mc^2 =$
- 20  $Bvlq$ , wherein
- $m$  equals a mass of one or more targets;
- $c$  equals the speed of light;
- $v$  equals the inertial velocity of said mass;
- $l$  equals the length of the organism or cell to which the field will be
- 25 applied; and
- $q$  equals unity of charge, to thereby determine a magnetic flux density
- (B).
3. The method of claim 1, further comprising administering the electromagnetic field at a
- 30 location relative to the organism for affecting the autonomic nervous system thereof.
4. The method of claim 1, further comprising administering the electromagnetic fields in a range between about  $10^{-12}$  to about 3.5 and a frequency between about 0 to about 28

Hertz at a location and relative to the organism to affect the parasympathetic nervous system thereof.

5. The method of claim 1, wherein the electromagnetic field is administered in a range  
5 between about  $7.5 \times 10^{-8}$  to about  $1 \times 10^{-6}$  gauss at a frequency from about 0 to about 28 Hertz to affect the sympathetic nervous system.
6. The method of claim 1, wherein said subjecting the organism to electromagnetic fields further comprises:  
10 placing the organism inside an external apparatus for generating the electromagnetic field.
7. The method of claim 1, wherein said subjecting the organism to electromagnetic fields further comprises:  
15 implanting a device for generating the electromagnetic field in the organism, wherein the apparatus is implanted in proximity to an organ to which the treatment is targeted.
8. A method of treatment or prophylaxis of a disease state or a condition in an organism,  
20 the method comprising:  
generating electromagnetic fields having a magnetic flux density from about  $5 \times 10^{-6}$  gauss to about  $1 \times 10^{-12}$  gauss and a frequency of between zero and about 140 Hertz, wherein the electromagnetic fields is applied therapeutically to treat or prevent cardiac diseases and conditions; and  
25 subjecting the organism to the electromagnetic fields.
9. A device for invasively administering an electromagnetic field in an organism, comprising:  
at least one inductor for emitting electromagnetic fields having a magnetic flux  
30 density from about  $5 \times 10^{-6}$  gauss to about  $1 \times 10^{-12}$  gauss and a frequency between 0 and 140 Hertz; and  
a means for implanting said inductor in the organism.

10. The device according to claim 9, wherein said inductor comprises at least one of a Helmholtz coil, a solenoid coil, and a saddle coil.
11. The device according to claim 9, wherein said means for implanting is a catheter  
operatively connected to said inductor, wherein and said inductor is contained within  
said catheter.
12. The device according to claim 9, wherein said means for implanting is a stent.
13. The device according to claim 11, further comprising:  
a first wire operatively connected to a first end of said inductor;  
a second wire operatively connected to a second end of said inductor; and  
an attenuator operatively connected to said first wire and said second wire; and  
a signal generator operatively connected to said attenuator for generating a  
signal through said inductor.
14. The device according to claim 13, wherein said attenuator and said signal generator  
are not implanted in the organism.
15. The device according to claim 13, further comprising:  
a balloon attached to a first end of said catheter, wherein said balloon is inflatable and  
deflatable in response to fluid pressure within said catheter tube; wherein said  
inductor is located within said balloon.
16. The device according to claim 13, wherein said inductor expands and contracts  
correspondingly with the balloon inflation and deflation.
17. A device for stimulating organ operation in an organism, comprising:  
a first solenoid coil for emitting electromagnetic fields having a magnetic flux density  
from about  $5 \times 10^{-6}$  gauss to about  $1 \times 10^{-12}$  gauss and a frequency between 0 and  
140 Hertz;  
a capacitor operatively connected to said solenoid;  
a means for implanting said solenoid and said capacitor in the organism; and

a means for inducing an electric current in said first solenoid.

18. The device of claim 17 wherein said means for implanting is a stent.

5 19. The device of claim 17, wherein said means for inducing further comprises:  
a catheter removably insertable into said first solenoid coil;  
a second solenoid coil attached to said catheter and removeably insertable into said  
first solenoid coil.  
a means for generating an electric current through said second solenoid coil whereby  
10 an electric current is induced in said first solenoid coil.

20. The device of claim 19, wherein said means for generating further comprises:  
a first wire attached to a first end of said second solenoid coil;  
a second wire attached to a second end of said second solenoid coil;  
15 an attenuator operatively connected to said first and second wires; and  
a signal generator operatively connected to said attenuator and said first and second  
wires, wherein said signal generator and said attenuator are not implanted into the  
organism.

20 21. The device of claim 17, wherein said means for inducing an electric current is an  
electromagnetic field generator that is external to the organism.

22. The device of claim 21, wherein said electromagnetic field generator further  
comprises:  
25 a Helmholtz coil external to the organism, wherein the organism in which said first  
solenoid has been implanted is placed inside of said Helmholtz coil such that a  
current is induced in said first solenoid coil;  
an attenuator operatively connected to said Helmholtz coil; and  
a signal generator operatively connected to said attenuator.

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23. The device of claim 21, wherein said electromagnetic field generator further  
comprises:

a second solenoid coil external to the organism, wherein the organism in which said first solenoid has been implanted is placed inside of said second solenoid such that a current is induced in said first solenoid coil;

an attenuator operatively connected to said second solenoid coil; and

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a signal generator operatively connected to said attenuator.